4223 - PERSONAL COMPUTER HARDWARE

Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)			
					Theory		Practical Ex.	Total
Lectures	Practical	Credits						
3	3	6	25	25	3 Hrs	100	50	200

Pre-requisite	Source
Nil	MEX

Semester	Theory	Test	Total	TW	PR	Gr Total
	75	25	100	50	50	200

Rationale: Computers have found extreme use and applications in the field of medicine. A large number of medical electronics equipment is directly PC based or having an interface to the PC. Hence knowledge of the internal working and basic troubleshooting of the computer and commonly used peripherals becomes essential for the medical instruments technician. This course in PC hardware covers up the internal hardware working of the PC and basic troubleshooting concepts are also introduced so as to reduce down time of the equipment.

COURSE CONTENTS	Hrs	Mks
1. PRIMARY SYSTEM COMPONENTS	20	
Motherboards, CPU types & specifications. 8085, 8086, 80286, 386SX, 386SL, 386DX, 486DX, 486SX, 486DX2 / DX4, Pentium, MMX. Clock doublers, triplex, super scalar & instruction pipeline architecture.		10
PC Bus System:- Bus types, Expansion slots, ISA, EISA, MCA, Local Bus, VESA Local Bus, PCI, PCMCIA.		5
PC Memory:- Conventional Memory, UMA, HMA, Extended Memory, ROM BIOS, SIMMS, DIMMS, EDO SD RAM's, Memory Map, Cache Memory, L1 & L2 Cache, Memory Testing.		10
System Clock, (CMOS Chip), System Controller, SMPS Rating Connection / ROM BIOS Setup.		5
2. INPUT DEVICES	5	10
Keyboard: - Keyboard components, Keyboard interface, Type of key switches, the keyboard connector. Keyboard troubleshooting and repair, defective cables, sticky keys, error code.		
Mouse: - Working principle of a mouse, Mouse types, Mouse cleaning & maintenance.		

3. OUTPUT DEVICES	10	15
How the video board works, CPU & video images, Video Memory, Video board characteristics, Resolution, Colour, Vertical & horizontal scan frequencies, Interlaced / non-interlaced monitors, Video cards - MDA, HGA, CGA, EGA, VGA, SVGA, Multi-frequency monitors, video troubleshooting.		
Printers:- Impact & Non impact Printers, Principle of operation of dot matrix, Inkjet, Laser & Line printer. Printer maintenance and troubleshooting.		
4. MEMORY PERIPHERALS	10	
Floppy Disk (FDD):- Drive components, Types of floppy disks and drives, Floppy disk construction - Physical & Logical. FDD installation. FDD errors, troubleshooting & maintenance.		10
Hard Disk Drive (HDD):- HDD components, HDD drive operation, HDD interface - ST506 / 412, ESDI, IDE SCSI, hard disk installation, HDD problem & troubleshooting.		15
CDROM Drive:- How CD's store data, Anatomy of compact disk, CD data modes, CD ROM drive operation & specification, CD ROM standards, CD ROM installations and troubleshooting.		15
5. AUDIO HARDWARE	3	5
Sound card concept and terms, Sound card characteristics, Sound card installation and applications.		
Total	48	100

REFERENCE BOOKS:

1. Upgrading & Repairs by Scott Mueller.
2. IBM PC advanced troubleshooting & repair by Robert C. Brenner.
3. Microcomputer servicing – Practical systems & troubleshooting by Stuart M. Asser, R. F. Barenberg, V. J. Stigliano
4. Microcomputer & Interfacing by Douglas Hall.